**OBJECTIVE**
Thyroid fine needle aspiration (FNA) cytology is indeterminate in 15-25% of cases (1). Diagnostic accuracy of FNA can be improved by the combination of molecular and cytological analysis (2). In this study, washing liquid of FNA (wFNA) samples was tested for BRAF V600E mutation, using High Resolution Melting (HRM). The aim was to demonstrate whether BRAF analysis is accurate in wFNA and can be an additional tool when combined with cytology.

**METHODS**
Study design: cohort study involving 481 patients, corresponding to 648 FNA samples. All samples were subjected to both cytological (on cells smeared on a glass slide) and molecular analysis (on fluids obtained washing the FNA needle with 1 ml of saline) on the same aspiration. BRAF V600E analysis was performed by HRM after careful methodological validation for application to wFNA (sensitivity: 5.4%).

**RESULTS**
According to the American Thyroid Association guidelines (3), the 648 samples were classified in cytological categories ranging from Thy 1 (nondiagnostic) to Thy 5 (diagnostic for malignancy). The BRAF V600E mutation was found in 2 (2.5 %) Thy 3, 6 (66.6%) Thy 4 and 6 (75%) Thy 5. Surprisingly, 5 (1.2%) Thy 2 samples resulted BRAF mutated. BRAF V600E mutations were confirmed by pyrosequencing in scraped Thy 2 cytological samples. Patients underwent thyroidectomy and the diagnosis of papillary carcinoma was confirmed at histology.

**CONCLUSIONS**
BRAF assessment can be accurately performed on wFNA and improves the diagnostic performance, regardless of cytological results. In perspective, stand-by wFNA samples could be analyzed a posteriori in case of indeterminate cytology and/or suspicious findings on ultrasound.

**REFERENCES**